




BUREAU OF RESEARCH

*Celebrating 20 Years of
Showcasing Research in Transportation*

NEW JERSEY DEPARTMENT OF TRANSPORTATION

20TH ANNUAL NJDOT

RESEARCH SHOWCASE

OCTOBER 17, 2018

Conference Center at Mercer
1200 Old Trenton Road
West Windsor, NJ 08550

20TH ANNUAL NJDOT RESEARCH SHOWCASE

AGENDA

The **Annual New Jersey Department of Transportation (NJDOT) Research Showcase** is an opportunity for New Jersey's transportation community to experience the broad scope of ongoing academic research initiatives and share technology transfer activities being conducted by institutions of higher education (IHE) partners and their associates. It also serves to highlight the benefits of transportation research, including NJDOT's own program. As part of the event, the annual implementation award and recognition of outstanding university students studying in a transportation-related field will be presented.

This program is organized by the NJDOT Bureau of Research in partnership with the New Jersey Local Technical Assistance Program (NJ LTAP) at Rutgers Center for Advanced Infrastructure and Transportation (CAIT) and meets requirements for up to 3 professional development hours (PDHs) for continuing professional competency for licensed professional engineers. *

8:15 a.m. Sign In and Networking

Atrium

9:00 a.m. Welcome and Introductory Remarks

Auditorium

Michael Russo, Assistant Commissioner, Planning, Multimodal and Grant Administration,
New Jersey Department of Transportation

9:15 a.m. Opening Remarks

Robert Clark, Division Administrator
Federal Highway Administration, New Jersey Division Office

9:20 a.m. Keynote Address

Diane Gutierrez-Scaccetti, Commissioner
New Jersey Department of Transportation

10:00 a.m. NJDOT Bureau of Research Technology Transfer

Kimbrali Davis, Section Chief, Bureau of Research
New Jersey Department of Transportation

10:10 a.m. Research Poster Exhibits and Break (Rooms 214/215)

10:40 a.m. The Ray: Let's Drive the Future

Harriet Anderson Langford, Founder and President, The Ray
Allie Kelly, Executive Director, The Ray

11:40 a.m. Presentation of 2018 Awards

Presenter: **Giri Venkateela**, Senior Engineer, New Jersey Department of Transportation

2018 Outstanding University Student in Transportation Research Award

2018 NJDOT Research Implementation Award

2018 Best Poster Award

2018 NJDOT Build a Better Mousetrap Award

12:00 p.m. Buffet Lunch and Research Poster Exhibits

* To confirm the acceptance of these PDHs for continuing professional competency for licensed professional engineers, please consult the licensure board of that state.

Cover photo: Shutterstock

Categories	CAPITAL PROGRAM MANAGEMENT: Pavement, Infrastructure, Materials, Right of Way, Construction Management
	PLANNING, MULTIMODAL & GRANT ADMINISTRATION: Planning, Multimodal, Environmental, Local Aid, Safety/Commuter Mobility
	TRANSPORTATION OPERATIONS SYSTEMS & SUPPORT: Operations, Maintenance, Traffic Safety Management
	POSTER PRESENTATIONS: Mini-Presentations
	EXHIBIT: Connected Vehicle Demonstration

1:45–2:15 p.m.	CAPITAL PROGRAM MANAGEMENT Auditorium Presenter: Mohammed Mahgoub, New Jersey Institute of Technology <i>90 Minute Rule</i>	
	PLANNING, MULTIMODAL & GRANT ADMINISTRATION Presenter: Christian Higgins, Cambridge Systematics <i>Channel Usage</i>	Room 213
	TRANSPORTATION OPERATIONS SYSTEMS & SUPPORT Presenter: Bekir Bartin, Rutgers University <i>Calibration/Development of Safety Performance Functions for New Jersey</i>	Room 125/126
	POSTER PRESENTATIONS Presenter: Yi Bao, Stevens Institute of Technology, <i>Fiber Optic Sensors for Real-time Monitoring of Civil Infrastructure</i> Presenter: Weina Meng, Stevens Institute of Technology, <i>Design and Performance of Cost-Effective Ultra-High Performance Concrete for Transportation Infrastructure</i>	Room 216
	EXHIBIT Presenter: Bransilav Dimitrijevic, New Jersey Institute of Technology, <i>Connected Vehicle Demonstration</i>	Outside

Concurrent Breakouts continued next page

CONCURRENT BREAKOUT SESSIONS *Continued*

2:30–3:00 p.m. CAPITAL PROGRAM MANAGEMENT

Auditorium

Presenter: Majid Ramezani, Stevens Institute of Technology

Vibro-acoustic Amplitude and Frequency Modulation in Steel Components for Life-cycle Assessment via Innovative Demodulation Algorithms

PLANNING, MULTIMODAL & GRANT ADMINISTRATION

Room 213

Presenter: Willow Lv, New Jersey Institute of Technology

Go Bus: A Job Access Link for Low Income Populations

TRANSPORTATION OPERATIONS SYSTEMS & SUPPORT

Room 125/126

Presenter: Anil Agrawal, City College of New York

Regulatory Framework for Use of UAS/Drones by NJDOT

POSTER PRESENTATIONS

Room 216

Presenter: Yusuf Mehta, Rowan University CREATES, *Evaluation of Geogrid Reinforced Asphalt Mixtures*

Presenter: Robert Miskewitz, Rutgers Center for Advanced Infrastructure and Transportation, *Evaluating the Impact of Activated Carbon on the Engineering Properties of Cement-Stabilized Contaminated Dredged Sediment*

EXHIBIT

Outside

Presenter: Branslav Dimitrijevic, New Jersey Institute of Technology, *Connected Vehicle Demonstration*

3:00 p.m. ADJOURN



About Our Presenters

Robert Clark, Division Administrator

Federal Highway Administration, New Jersey Division Office

In June 2013 Robert became the FHWA New Jersey Division Administrator. As the Division Administrator, Robert is the principal representative of the Federal Highway Administration (FHWA) in New Jersey and is responsible for administering the Federal-aid highway program in the State. In this role, Robert has total authority to ensure that programs and projects using federal-aid funds comply with applicable Federal and State laws, regulations and policies.

Kimbrali Davis, Section Chief, Bureau of Research

New Jersey Department of Transportation

Kimbrali Davis has been with the New Jersey Department of Transportation since 2002, where she began her engineering career as an assistant engineer in the Bureau of Materials. She is currently a Section Chief in the Bureau of Research, a position that allows her to weave her professional career with her personal passion. The Bureau of Research at NJDOT funds several projects annually that provide a unique opportunity to bring together many transportation customers, innovators, and implementers to exchange their ideas. Through this work, Kim is able to meet and work with collegiate engineers at several universities in New Jersey and travel across the country sharing their innovative technology with other state transportation agencies.

Kim enjoys working with the AASHTO Research Advisory Committee, serving on National Cooperative Highway Research Program panels, and coordinating the New Jersey State Transportation Innovation Council. She has a BS in Ceramic Engineering (Now Material Science & Engineering) from Rutgers University.

Allie Kelly, Executive Director

The Ray

A Georgia native, Allie Kelly earned a B.A. degree in political science from the University of Georgia. She has worked in public policy for over 15 years, first as a lobbyist for UPS in Washington, D.C., then returning to Atlanta and founding Georgia Watch in 2002, which is the state's only consumer watchdog organization. In 2009, she left Georgia Watch to join former Lt. Gov. Pierre Howard at the Georgia Conservancy as its senior vice president.

Working with the Ray C. Anderson Foundation, in 2015 Allie helped found and now directs an affiliated foundation called The Ray, which is the world's first regenerative highway project. The Ray is a global proving ground for the evolving ideas and technologies that will shape the transportation infrastructure of the future, paving the way to zero-impact roadways for all. Visit TheRay.org to join the movement.

Harriet Anderson Langford, Founder and President

The Ray

Harriet Langford is the Founder and President of The Ray. Harriet is also a Trustee of the Ray C. Anderson Foundation, a Georgia-based private family foundation honoring the legacy of her father, the late Ray C. Anderson (1934-2011), Founder and Chairman of Interface, Inc., the world's largest modular carpet manufacturer, and a global leader in sustainability.

Harriet's entrepreneurial leadership skills, her servant spirit and her passion for team sports led her to a natural transition into nonprofit leadership in 2011, when she assumed her current role with the family foundation.

Over the past 30-plus years, Harriet has served in numerous nonprofit leadership roles in her local community. Harriet is a graduate of the University of West Georgia.

Michael Russo, Assistant Commissioner, Planning,

Multimodal and Grant Administration

New Jersey Department of Transportation

Michael Russo was appointed to the position of Assistant Commissioner in August 2017. Mike is responsible for managing approximately 230 employees in the Divisions of Statewide Planning, Multimodal Services, Local Aid and Economic Development, Environmental Resources, and the Bureau of Transportation Data and Safety.

Mike has 34 years with NJDOT beginning his career as a Civil Engineer Trainee in the Region 3 Design Office working primarily on projects along the Route 1 corridor. Most recently Mike served as Director of Local Aid and Economic Development leading a team of professional and administrative staff in five Local Aid offices responsible for the Department's \$530 million Local Aid program.

Earlier in his career Mike served in various capacities including Project Engineer of a Roadway Design Squad, District Engineer of the Freehold Local Aid Office, and Manager of the Bureau of Design Coordination and Geometric Design. Mike also served in the Division of Project Planning and Development managing Concept Development and Feasibility Assessment efforts on projects throughout the state including the I-295/Route 42/I-76 Direct Connection Project.

Mike received his bachelor of science degree in civil engineering from the University of Miami.

Continued next page

About Our Presenters *Continued*

Diane Gutierrez-Scaccetti, *Commissioner* New Jersey Department of Transportation

A native New Jerseyan, Diane Gutierrez-Scaccetti is a transportation professional with more than 28 years in the industry, and 34 years in government service. She possesses extensive executive, operational and planning knowledge. Most recently, the Commissioner served as the Executive Director and CEO at Florida's Turnpike Enterprise, a part of the Florida Department of Transportation. Under her leadership, Florida's Turnpike Enterprise managed more than 460 centerline miles and a 5-year capital program in excess of \$6 billion, supported by \$1 billion in revenues.

Prior to the Commissioner's Florida experience, she spent 21 years at the New Jersey Turnpike Authority, working her way up from a Contract Administrator to the post of Executive Director, a position she held from 2008 to 2010. During her tenure, she managed the day-to-day administrative operations and was chief negotiator for the agency's several collective bargaining units.

Ms. Gutierrez-Scaccetti participated in several major agency initiatives, including the remediation of the E-ZPass System, the financial and operational consolidation of the New Jersey Turnpike Authority and New Jersey Highway Authority, bringing the New Jersey Turnpike and Garden State Parkway under a single organization. A major undertaking was the development and financing of a 10-year, \$7 billion capital program that kicked off the widening of the New Jersey Turnpike from Interchange 6 to Interchange 9. This transformational project provided significant congestion relief to a major portion of the I-95 Corridor.

Commissioner Gutierrez-Scaccetti holds degrees from the University of Connecticut (BS) and Rutgers, The State University of New Jersey (MS).

Giri Venkateela, *Senior Engineer, Bureau of Research* New Jersey Department of Transportation

Giri Venkateela works as a research project manager at NJDOT Bureau of Research, responsible for managing various research projects and NJDOT transportation pooled-fund programs. He is a coordinator of the NJ State Transportation Innovation Council.

Giri also serves as a chair and member for various NCHRP research projects and TRB standing committee member for AFF30 (concrete bridges), AHD45 (corrosion) and AHD40 (adhesives and sealers). He has published various journal articles and provided numerous conference talks related to infrastructure materials. He received his doctoral degree in Civil Engineering from University of Louisville.



[illegible]



20TH ANNUAL NJDOT RESEARCH SHOWCASE PARTNERS

Cambridge Systematics, Inc.

City College of New York, Research Foundation

Lehigh University

Monmouth University

New Jersey Institute of Technology

Princeton University

Richard Stockton College

Rowan University

Rutgers, The State University of New Jersey *

Stevens Institute of Technology

The College of New Jersey

** Official USDOT University Transportation Center*

The 20th Annual NJDOT Research Showcase is organized and sponsored by the NJDOT Bureau of Research in partnership with the New Jersey Local Technical Assistance Program (NJ LTAP) at Rutgers Center for Advanced Infrastructure and Transportation (CAIT) and co-sponsored by the Federal Highway Administration.



NEW JERSEY LOCAL TECHNICAL ASSISTANCE PROGRAM (NJ LTAP)

Rutgers, The State University of New Jersey

100 Brett Road

Piscataway, NJ 08854-8058

848-445-3112

>> cait.rutgers.edu/njlta